BRIEFING NOTES

ON

ALACHLOR (LASSO®)

FOR

MEDICAL OFFICERS OF HEALTH

May 13, 1985

Ontario

MINISTRY OF THE ENVIRONMENT
MINISTRY OF LABOUR
MINISTRY OF HEALTH
MINISTRY OF AGRICULTURE AND FOOD

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Contents

* Lasso® is a registered trade mark of Monsanto Company.

ONTARIO'S COMPREHENSIVE PROGRAM FOR ALACHLOR TESTING, MONITORING AND ABATEMENT

The spraying season for Alachlor (Lasso) has begun and will continue through May and June. The herbicide, placed under federal restrictions in February, is used throughout southern Ontario, with intensive use in Kent, Lambton, Huron, Middlesex and Essex counties, mainly on corn and soybean crops.

As a result of federal restrictions on its use and concern about the possibility of drinking water contamination, the Ministry of the Environment has developed a comprehensive testing, monitoring and abatement program. The program was put into effect May 3, 1985, and will continue until November.

In addition to extensive testing of both municipal and private water supplies in areas where Alachlor is widely used, an abatement program using Granulated Activated Carbon (GAC) or Powdered Activated Carbon (PAC) has been put in place at four of the five municipal water treatment plants where Alachlor was found in 1984: Harrow, Mitchell's Bay, Dresden and Alvinston. Treatment at the fifth, Tilbury, is expected to be in place soon.

BACKGROUND

The entire Alachlor program is a co-operative effort co-ordinated by the Ministry of the Environment (MOE) with personnel from Agriculture Canada, the Ontario Ministries of Labour, Health, Agriculture and Food, and local Medical Officers of Health.

Based on earlier sampling, MOE monitoring of municipal water supplies will be carried out on a priority basis. Priorities for monitoring of private water supplies will be selected by Ministry of the Environment personnel, in consultation with local Medical Officers of Health.

Analyses of municipal water supplies will be performed at MOE laboratories. Private water supplies will be analyzed by the Ontario Agriculture and Food laboratory at the University of Guelph. The Agriculture Canada laboratory at Ottawa will provide back-up analytical resources, and take part in a quality control program.

PRIORITIES

Priority 1 testing requires two samples a week of both raw and treated water. Treated water will be analyzed only if traces of Alachlor are found in the raw water.

Water will be tested daily for a period of one week after rainstorms.

Priority 2A testing requires one sample a week of raw and treated water, with analysis and after-storm testing the same as for Priority 1.

Priority 2B and Priority 3 testing requires one sample a week of raw water only. If test results are positive, the area will be upgraded in priority accordingly.

Samples will be taken twice a week after a storm.

In the Southwestern Region, intensive sampling on a Priority 1 basis will be carried out at municipal water treatment plants at Harrow, Tilbury, Mitchell's Bay, Dresden and Alvinston.

At the same time, an abatement program using Granulated Activated Carbon (GAC) or Powdered Activated Carbon (PAC) to remove Alachlor from the water has been put in place at the five above-mentioned treatment plants.

Priority 1 testing of municipal water supplies will also be carried out at Amherstburg, Wallaceburg, Stoney Point and Port Stanley.

Priority 2A testing will be conducted at Paisley, Strathroy, Woodstock, Mount Brydges and Centralia.

Priority 2B testing will be conducted at Hanover, Belle River, Windsor, Union Water Supply Station (W.S.S.), Elgin Area W.S.S., Blenheim and the Baldwin Subdivision.

Priority 3 testing will be conducted at Lake Huron W.S.S., Thamesville, Delaware, Hensall, Dorchester, Komoka Springs, Thamesford, Mitchell, Kilworth, and Trout Haven Trailer Park.

Additional MOE sampling will be carried out in the West Central Region at Brantford and Delhi (Priority 1) and Shelbourne (Priority 2).

Central Region will conduct Priority 1 sampling at Lindsay and Brechin.

Southeastern Region will carry out Priority 1 sampling at Plantagenet, Alexandria, and Casselman and Priority 3 testing at Frankford and Mayhew Creek.

The two priority groups listed below also include Indian reserves: Priority 2A - Oneida, Caradoc and Moravian reserves; and Priority 2B - Kettle Point and Walpole reserves.

MOE will contact the respective federal and provincial authorities regarding sampling requirements.

Private water supplies to be tested will be identified by a survey co-ordinated by MOE regional staffs, in co-operation with OMAF and local Medical Officers of Health.

MOE Southwestern Region will identify a sampling program to the local MOHs based on areas of susceptibility and the capability of the OMAF laboratory to handle samples. Based on this information, sites will be selected.

MOHs will also be responsible for all comment on the health implications of test results.

In February, Health and Welfare Canada designated an interim figure of 5 parts per billion (p.p.b.) as an action level for Alachlor. It was recommended that when Alachlor is discovered at or above the 5 p.p.b. level, alternative water supplies (trucked or bottled water, etc.) should be provided.

In cases where this 5 p.p.b. action level is reached or exceeded in either municipal water treatment plants or private wells, the Ministry will provide such alternative water supplies.

If Alachlor is discovered at levels likely to fluctuate above 5 p.p.b., municipal water treatment plants will be treated with either GAC or PAC, depending on the technical requirements of the facility.

REGULATORY OVERVIEW

Background

Alachlor (Lasso) is a herbicide produced by Monsanto Company in the United States and was first introduced in the marketplace in 1969. It is distributed in Canada by Monsanto Canada Inc. It is used primarily on corn and soybean crops.

Alachlor (Lasso) is the second most widely used herbicide in Ontario and used by about 45,000 out of 90,000 farmers.

The use of pesticides in the U.S. is regulated by the U.S. Environmental Protection Agency. In fulfillment of U.S. EPA requirements, recent studies were conducted by Monsanto Company indicating that the material is oncogenic (tumour causing) in laboratory animals.

As a result of these studies the EPA in 1985 decided to require additional testing and in the meantime to impose restrictions on its use. The restrictions include a hazard warning on the label, cancellation of use on potatoes, aerial application on all crops, the implementation of protective clothing requirements and a special training program for users.

In addition the EPA added a caution on the label on use near wells and open water.

The completion of the EPA review of Alachlor (Lasso) will take several years.

In the spring of 1984, Monsanto Canada Inc. and the EPA supplied its information to Agriculture Canada and Health and Welfare Canada.

The primary regulatory responsibility for pesticides in Canada rests with Agriculture Canada which administers the Pest Control Products Act. No pesticide may be used, sold or imported into Canada unless it is registered under that Act. The federal government examines the efficacy and basic safety of the product in its registration procedure. It also determines what the product can be used for and how; no other use of the product is legal. Finally, the federal authorities control what will appear on the label and most of this relates to usage.

Health and Welfare Canada in summer 1984 expressed concern to Agriculture Canada regarding the potential cancer risk of this product to users.

Agricultural use of this product in North America has resulted in Alachlor occasionally being found in drinking water supplies.

As a result of information obtained in August, 1984 from Health and Welfare Canada, then Environment Minister Andy Brandt asked the Ministry's Pesticides Advisory Committee (OPAC) to review the use of Alachlor (Lasso) in Ontario.

An OPAC team, including representatives of the Ministries of the Environment, Labour and Health reviewed toxicological data with representatives of Health and Welfare and Agriculture Canada. They also met with representatives of Monsanto and corn and soybean growers in August and December of 1984.

OPAC carried out an analysis of exposure assessment and recommended discontinuation of the use of Alachlor as soon as practical, with interim restrictions on the herbicide to be imposed immediately in Ontario.

Although the data base was and still is extremely limited. Ontario expressed concern about possible contamination of drinking water supplies in early 1985 and asked that Agriculture Canada take this into consideration in arriving at its regulatory decision.

Agriculture Canada, in consideration of the importance of human health and safety, implemented substantial risk-reduction measures while allowing existing stocks in Canada to be used up.

On February 22, 1985, Agriculture Canada instituted the following restrictions:

1. temporary registration for 1985 only;
2. a cancer-hazard warning on the label;
3. cancellation of use on potatoes and aerial application;
4. protective clothing requirements;
5. a request that Monsanto carry out a training and educational program for users.

The federal and provincial pesticides programs are complementary and well integrated. Once a pesticide is registered federally, the provincial government then looks more closely at the product and determines what additional precautions need to be taken in its use.

As the restrictions imposed by the federal government on the use of Alachlor (Lasso) largely coincide in their effect with the recommendations made by OPAC, Ontario decided that no additional regulatory action was warranted.

In response to Ontario's request for an action level, Health and Welfare Canada provided a figure of 5 parts per billion (ppb) as an interim action level for Alachlor (Lasso) in drinking water.

In addition, a Federal Hearing Board will be established by Agriculture Canada in the fall of 1985 to assess the future use of Alachlor in Canada. Ontario's monitoring data will make a significant contribution to this federal regulatory assessment.

The Ontario Ministry of Agriculture and Food has issued an advisory to all farmers on the safe handling and application of Alachlor (Lasso). This advisory specifically addresses procedures to reduce occupational exposure and environmental contamination.

The federal/provincial programs are complementary and well integrated. The action taken by the federal government essentially addresses Ontario's concerns about toxicology and human exposure.

The finding of Alachlor in some Ontario drinking water is a concern. For this reason Ontario asked the federal government to provide an interim guideline to protect human health. The current monitoring program will augment the available data so that remedial measures may be undertaken if needed.

Federal-Provincial actions are being taken that will protect human health pending the outcome of the Federal review of the registration of Alachlor in the fall of 1985.

PRIVATE WATER SUPPLIES
PROTOCOL FOR ADVISING
LOCAL MEDICAL OFFICERS OF HEALTH

1) Site Selection

- Ministry of the Environment (Regions) selects private water supplies for testing in consultation with local Medical Officers of Health.
- Ministry of the Environment (Regions) gathers samples.

2) Sample Analysis

- Laboratory analysis is performed by Ministry of Agriculture and Food.
- Results are sent to Water Resources Branch and MOE Regional Office.

3) Data Transfer to Medical Officer of Health

- All sampling data is transferred to local Medical Officer of Health who conveys data to well owner as in (4) below.

4) Inspection and Advice

a) Levels Less than 1 ppb

- Local Medical Officer of Health advises well owner that no Alachlor was detected.

b) Levels At or Above 1 ppb and Less than 5 ppb

- Joint inspection by Medical Officer of Health and Environment staff is conducted and the well owner is assured that water meets the Federal health guideline.
- Immediate re-sampling and re-testing by Environment.
- If re-testing reveals a higher concentration than previously found, then non-use of well is suggested, and an alternative source of drinking water is offered by the Ministry of the Environment; re-testing takes place, until condition 4a or 4c is reached.

- If the concentration is equal to or less than the re-testing result, then the well reverts to the regular testing schedule.

c) Levels Equal to or Greater than 5 ppb

- Joint inspection by Medical Officer of Health and Environment.

- Medical Officer of Health advises non-use of the well, and that an alternative source of drinking water is offered by the Ministry of the Environment.

5) Remedial Action

. Remedial Action to clear contamination according to established Ministry of Agriculture and Food procedures.

. Re-testing of well according to standard well-testing procedures beginning with Step 1 above.

HUMAN HEALTH EFFECTS OF ALACHLOR (LASSO®)

BACKGROUND

Lasso is relatively low in toxicity for brief single exposures. It is reported that repeated skin exposure can lead to allergic dermatitis but the main health concerns are related to long-term repeated exposure to the herbicide.

There have been no complete epidemiological studies of groups exposed to Lasso for extended periods of time. A limited study of Monsanto Company production workers has been carried out but the results of the study have not yet been publicly released by the company.

The following positions on health issues have been developed by physicians, toxicologists, environmental biologists and scientists from other relevant disciplines.

EPIDEMIOLOGY

The provincial government is conducting a county by county epidemiological study of cancer rates among rural and urban communities in Ontario.

LASSO IN LIVESTOCK AND THE FOOD CHAIN

Tolerances

Maximum permissible residue levels for Alachlor (Lasso) in or on raw agricultural commodities have been set by the U.S. Environmental Protection Agency. These are shown on page 5 of the EPA Document 1, December, 1984. No exceedances of these tolerances have been found in limited Canadian surveys.

Bio-accumulation

Fish

Although no experimental data exists it seems unlikely that Lasso would accumulate in fish because of its high water solubility and rapid excretion.

Milk

If cows have drunk from water sources contaminated with Lasso, milk will be tested by the Ministry of Agriculture and Food (OMAF).

GROUPS OF SPECIAL CONCERN

Women Who Are Or May Be Pregnant

Lasso shows a no-effect level for reproductive effects in a three generation study in rats of 10 milligrams per kilogram (mg/kg) per day. There have been no reports of reproductive problems in humans but no special studies of pregnant women have been carried out. No birth defects were found in rats fed at the highest dose of Lasso (Alachlor) which was 400 mg/kg/day.* It is therefore considered that both pregnant women and the fetus should be adequately protected by the 5 p.p.b. guideline in drinking water if this is the only source of exposure to Lasso.

PERSONS EXPOSED TO LASSO THROUGH THEIR WORK

Non-dietary exposure to Lasso by a farmer as an applicator can be very high. The more significant occupational exposures occur through the skin and result from mixing, loading, transfer, cleaning and repair operations. The OMAF safety instructions for using Lasso have been distributed to all farmers in the areas where Lasso is applied. Strict adherence to these instructions should greatly diminish the risk to the applicator and protect water supplies from contamination.

RECREATIONAL WATERS

Because Lasso is water soluble and penetrates the skin easily, swimming in contaminated water, such as may occur in farm ponds or rivers contaminated by runoff, poses a health risk. Because of high skin absorption, the same guideline level of 5 p.p.b. should be used for deciding on the safety of recreational water. Further testing of beach areas will be carried out during 1985; depending on the results, a protocol on beach advisories will be developed.

* At the usual consumption of two litres of water per day at the guideline level of 5 p.p.b. (5 micrograms per litre) an adult would ingest 10 micrograms of Alachlor per day.

INVESTIGATION OF PERSON THOUGHT TO HAVE HAD A POTENTIALLY HARMFUL EXPOSURE TO LASSO

Clinical Investigation

As with any case of possible overexposure to a chemical, a careful account of the circumstances of the exposure (amount, duration and manner of exposure) is usually the most valuable information in assessing the risk to the individual. Except for irritation of the eyes and nose, and possible skin irritation, no effects are thought likely to be found after brief exposures. No information on biological monitoring of exposed persons is available but the following information and suggestions are based on the known characteristics of Lasso.

- Ninety-seven per cent of the absorbed dose of Lasso is excreted in 96 hours in experimental animals. Therefore a 24-hour urine specimen would contain about 50 per cent of the acute dose if collected immediately after exposure. In persons with known overexposure to Lasso, the level of the herbicide in first-morning (i.e. concentrated) specimen of urine would provide the best chance of obtaining an index of exposure. Urinalysis for Lasso has not yet been attempted by the provincial government but this is now under active study. In the case of considerable acute exposure as might happen in an accident, liver function tests (SMA 12) might on experimental grounds be worth carrying out along with repeated testing of the urine for Alachlor. In the case of nursing mothers who may be exposed to Alachlor at levels above the guideline value of 5 p.p.b. in drinking water it may be possible to analyze breast milk samples for Lasso. The feasibility of this analysis is being investigated.

Guide To
Handling and Application
of Lasso^{R} (alachlor)

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March 27, 1985

Guide to Handling and Application of Lasso^{R} (alachlor)

Agriculture Canada changed the full registration for Lasso^{R} (active ingredient alachlor) recently to a temporary registration for the remainder of 1985.

The use of this product may be hazardous to human health. Alachlor has been determined by studies conducted by Monsanto to cause tumors in laboratory animals.

While alachlor does not appear as a residue on corn, soybeans or white beans (maximum residue limit 0.1 ppm), it has been found to be an occasional contaminant in some public drinking water supplies.

The main purpose of this article is to guide users into minimizing the contamination of water and emphasize personal protection when handling Lasso^{R} (alachlor).

PROTECTION OF DRINKING WATER SUPPLIES

Pesticides can appear in water supplies as a result of careless handling of concentrates leading to accidental spills while mixing and loading spray equipment. Heavy rains with accompanying runoff can cause pesticides to be carried into surface water of streams and ponds. Rainfall can leach pesticides through the soil to tile drainage waters and shallow wells and possibly contaminate ground water.

The following guidelines are intended to assist in minimizing water contaminations:

1. STORAGE OF CONCENTRATES Lasso^{R} should be kept under lock and key in storage away from water supplies, and above spring flood levels.

2. EMPTY CONTAINERS Residues left in empty containers have often found their way into surface waters. All empty containers should therefore be jet or triple rinsed, crushed and buried in a landfill along with regular garbage.

3. MIXING AND LOADING CONCENTRATES Surface and ground waters most frequently become contaminated as a result of spills from dropped containers or the back-syphoning of a spray tank during mixing with water. Water can be directly contaminated by discharge into the supply or by runoff over treated soil adjacent to a water supply.

To avoid either eventuality, the concentrate in the tank should be mixed only after the water has been drawn and once the equipment has been moved to a safe distance, i.e. 30 m from the supply. The safest and wisest practice is to draw water into a nurse tank and do the loading and mixing 30 m or more away from the water supply.

When drawing water from any source, an anti-back-flow device should be used. When drawing from surface water, it is mandatory to use this device.

4. FIELD APPLICATION Under normal spraying conditions, herbicide drift is confined to only 5 to 10 m down wind (less 10 km/h). Therefore in spraying Lasso^{R}, a buffer of 5 to 10 m should be left between the water source and the sprayed area. (Larger set-backs are required to protect against runoff problems and are discussed under the next section).

The untreated strips can be sprayed with a registered herbicide other than Lasso^{R} (alachlor) to destroy grasses, preferably with a post-emergence herbicide since the presence of a standing crop reduces drift and runoff.

5. LOSS FROM RUNOFF Heavy rainfalls following spraying can remove pesticides from the soil surface in runoff waters and deposit them in streams, ponds and wells. The greatest losses occur when the rains fall within 24 hours of application. Removal from the soil surface decreases with time following application and is usually negligible one week after spraying.

To reduce this type of loss and minimize water contamination, users should avoid using Lasso^{R} (alachlor) on fields adjacent to and sloping into streams. These fields can be sprayed with other herbicides, preferably with post-emergence herbicides since a standing crop reduces runoff. If runoff is a problem, separation distances of 75 m to 100 m should be used between spraying Lasso^{R} (alachlor) and streams, rivers and drainage ditches.

Runoff is normally more severe on clay soils and less of a problem on sandy soils.

6. PROTECTION OF WELLS In shallow and sand point wells, water can be very close to the surface. Heavy rains can carry pesticides into the surface layers of the soil to contaminate water in these type of wells.

To reduce contamination, do not spray within 10 m of shallow wells.

7. APPLICATOR RESPONSIBILITY Under the Pesticides, Water Resources and Environmental Protection Acts, a person could be prosecuted for contaminating surface waters. Many communities draw their drinking water supplies from rivers and streams and, in 1985, will be vigilant in watching for water contamination. Past records show that if alachlor is to appear in surface water, it will most likely be present during the months of June and July.

8. FARM DRINKING SUPPLIES Farm families should not be using the same well for spraying and domestic supplies; a separate well is needed.

   While a shallow surface well will suffice for spraying, a deeper well, at least 10 m below ground, is the minimum recommended for drinking water supplies. Alachlor breaks down slowly in a contaminated well and hence the removal or disappearance of residues following a spill could take weeks or months.

   For decontamination of a well see Factsheet No. 82-032 "Pesticide Contamination of Farm Water Supplies: Recommendations on Avoidance and Cleanup".

PERSONAL PROTECTION

Although there are no guarantees that minimizing exposure reduces the long-term risks, applicators should make every effort to reduce exposure to Lasso^{R} (alachlor) by wearing protective clothing and following the label or the directions below.

The following practises are intended to reduce exposure of applicators and their families:

1. STORAGE OF PESTICIDES To avoid unauthorized persons coming into contact with Lasso^{R}, the concentrate should be stored under lock and key.

2. MIXING AND LOADING CONCENTRATE Only those aware of the potential hazards of Lasso^{R} (alachlor) should handle it.

   The greatest exposure to any pesticide occurs during mixing and loading. The most frequent exposure results from spills onto hands, body, head and feet or splashes into the eyes. Therefore when handling concentrate, these areas should be protected by rubber gloves, coveralls, head covering, rubber boots and goggles.

The use of bulk tanks and automatic dispensers can reduce the exposure during mixing and loading. The Monsanto Chemical Company reports the greatest exposure is to the hands, as seen in the table below.

	EXPOSURE[1] (as % of Total)		
	MIXING AND LOADING	FIELD APPLICATION	TOTAL
Hands	55%	15%	70%
Rest of body	28%	2%	30%
Inhalation	0.1%	0.1%	0.1%

[1] HANDLING 22 L containers

3. FIELD SPRAYING Low pressure boom-type spraying usually results in low level exposure provided the wind speed is below 10 km/h and the equipment operates properly. As the wind speed increases so does drift; spraying should be terminated when the wind speed exceeds 10 km/h. In the event of a blockage or the need for repairs, minimize exposure by wearing rubber gloves and the clothing mentioned above.

4. PERSONAL HYGIENE AND DECONTAMINATION During the spraying period, clothes and head covers should be changed twice daily. The procedure followed before meals should be to remove all spray clothes, shower and wear freshly laundered clothes. Clothes should be laundered daily in separate washing machine loads. Remember, dry clothing protects against exposure while wet clothing increases exposure the longer it is worn.

Splashes onto skin should be washed off immediately with water or preferably soap and water. If spills occur onto clothing, remove all clothes, shower and dress with freshly laundered apparel. Do not burn clothing which has been drenched or has otherwise absorbed concentrated pesticide. Such clothing must be disposed in a sanitary landfill in accordance with municipal requirements.

5. SPRAY EQUIPMENT In order to minimize exposure in subsequent handling, spray equipment should be thoroughly washed inside and out, after the spraying of Lasso^{R} (alachlor) is completed. This should be carried out away from water supplies. Residues can remain for considerable periods on equipment and be picked up on the skin and clothing during subsequent handling and contact.

6. FURTHER INFORMATION For further information check with your district agricultural office.

SUMMARY ON HANDLING LASSO (alachlor)

Protect Water Supplies -- It is an offence to contaminate surface waters with pesticides.

1. Store concentrates above floodplain.
2. Rinse, crush and dispose of empty containers.
3. Mix concentrate and water 30 m away from water supply.
4. Use appropriate buffer zones to avoid surface water contamination by spray drift or runoff waters.
5. Draw drinking water supplies from separate wells at least 10 m deep.
6. Do not spray within 10 m of shallow wells.

Personal Protection

1. Store concentrate under lock and key.
2. Handle concentrate and spray with rubber gloves, rubber boots, goggles, head covering and coveralls.
3. Change into fresh clothes twice a day and shower before eating and at the end of the day.
4. Shower and change into fresh clothes immediately after a spill.
5. Wash spray equipment after use.

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COMMUNICATIONS PLAN

BACKGROUND

Alachlor, sold by Monsanto under name of Lasso, has been in unrestricted use on soybean, corn and potato crops in Southwestern Ontario since 1969 (approximately 45,000 farmers).

Alachlor is widely used in the U.S. and other parts of Canada. Because recent animal studies have shown that Alachlor can cause tumours in rats, Agriculture Canada with the urging of Environment Ontario and the Ontario Pesticides Advisory Committee has restricted the use of the herbicide to corn and bean crops. Aerial spraying and use on potatoes has been discontinued.

Federal Health and Welfare issued a guideline of 5 p.p.b. as the acceptable level in drinking water.

The U.S. continues to permit restricted use (same as Ontario restrictions) and has undertaken a lengthy study of the health effects of Alachlor.

Random testing of untreated and drinking water in Ontario last summer showed some levels higher than 5 p.p.b. when Alachlor was in unrestricted use.

As a precaution, Environment Ontario will carry out a comprehensive monitoring and water sampling program to determine whether the restricted use is effective in preventing the herbicide from getting into water supplies at unsafe levels.

Should levels be detected, the Ministry will use carbon treatment in municipal water treatment plants and will provide bottled water to well owners when levels of 5 p.p.b. are detected or when Medical Officer of Health and MOE regional staff deem it necessary.

Ontario's testing program can be expected to generate a number of health, food and livestock related questions, which involve Ministries of Environment, Health, Agriculture and Food and Labour.

We expect that most of these questions will be health related and directed to the local Medical Officer of Health, the local Environment Regional Director, and Communications Branches in Environment, Health, Labour and Agriculture and Food. Expert support and advice will be available (see expert support for medical officers of health, attached).

LOCAL COMMUNICATIONS

Where possible, local questions will be answered by Environment regional office, local Medical Officer of Health, local Agriculture and Food representative. Environment will assign a communications officer to the regional office to assist the Director if necessary.

REPORTING TEST RESULTS

Local private well results will go to regional offices, then to MOHs and subsequently to well owners. Aggregate data will be shared with local media by MOHs on request. No well-owner's name or address should be given to the media.

Local municipal results will go to regional offices and medical officers. A summary of test results will be compiled by Water Resources and forwarded to Environment Communications branch (Diane Rimstead, Bob Reguly, Wayne Edmonstone) by location, date, levels, for distribution to involved Ministries and senior management. Media questions on overall statistics will be handled by Environment Communications.

It is essential that test results be released by these parties only, to reduce any chance of conflicting numbers.

GENERAL MEDIA AND PUBLIC INFORMATION

Environment Communications Branch will also serve as a general information centre and keep other communications branches informed of any new developments.

Communications Branches in Labour, Health and Agriculture and Food will handle general inquiries from public and media as follows:

Media and professional inquiries on health concerns should be directed to
Dr. Jim Stopps, Labour (965-6375). Dr. L. Ritter, Federal Health and Welfare, Ottawa (613) 993-6010 is contact for 5 p.p.b. health limit.

Inquiries on health concerns from public to local medical officers of health.

Inquiries on farmers' concerns and food quality should be directed to Dr. Ken McDermid, Agriculture and Food (965-3011). Bruce Stewart, Communications 965-1056.

Media inquiries on testing treatment program, Pesticides Act, should be directed to Environment Communications Branch (965-7117 - Bob Reguly, Wayne Edmonstone, Diane Rimstead).

Inquiries on well testing and clean-up should be directed to regional Environment offices.

EXPERT SUPPORT FOR MEDICAL OFFICERS OF HEALTH

1. REGULATORY OVERVIEW

   MR. S.W. ORMROD - AGRICULTURE CANADA (613) 995-7900

   MR. J. ONDERDONK - ONTARIO MINISTRY OF THE ENVIRONMENT (416) 965-2401

2. DRINKING WATER SAMPLING, ANALYSIS AND TREATMENT

   MR. G. MISSINGHAM - ONTARIO MINISTRY OF THE ENVIRONMENT (416) 965-6995

3. DRINKING WATER AND PESTICIDES - DRINKING WATER GUIDELINES

   DR. P. TOFT - HEALTH AND WELFARE CANADA (613) 990-9071

4. TOXICITY DATA

   DR. L. RITTER - HEALTH AND WELFARE CANADA (613) 993-6010

5. RISK ASSESSMENT

   DR. D. KREWSKI - HEALTH AND WELFARE CANADA (613) 993-6010

6. HUMAN HEALTH EFFECTS

   DR. J. STOPPS - ONTARIO MINISTRY OF LABOUR (416) 965-6375

7. PROTOCOL FOR ADVISING LOCAL MEDICAL OFFICERS OF HEALTH

   DR. P. KENDALL (416) 963-2246